

# Operating Instructions

## Busch-Dimmer<sup>®</sup>

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Memory Touch-Type  
Controller  
6550 U-101  
6550



# Operating Instructions

## Busch-Dimmer®

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## 1 Safety



### Warning

#### Electric voltage!

Risk of death and fire due to electrical voltage of 230 V.

- Work on the 230V supply system may only be performed by authorised electricians!
- Disconnect the mains power supply prior to installation and/or disassembly!

## 2 Intended use

The device is to be used exclusively with the components that are supplied and licensed as described in chapter "Setup and function".

## 3 Environment



#### Consider the protection of the environment!

Used electric and electronic devices must not be disposed of with domestic waste.

- The device contains valuable raw materials which can be recycled. Therefore, dispose of the device at the appropriate collecting depot.

All packaging materials and devices bear the markings and test seals for proper disposal. Always dispose of the packaging material and electric devices and their components via the authorized collecting depots and disposal companies.

The products meet the legal requirements, in particular the laws governing electronic and electrical devices and the REACH ordinance.

(EU Directive 2002/96/EC WEEE and 2002/95/EC RoHS)

(EU REACH ordinance and law for the implementation of the ordinance (EC) No.1907/2006)

## 4 Operation

### 4.1 General

Lighting systems can be switched or dimmed directly via the touch-type controller or alternatively via additionally connected push-buttons (extension units). For operation, the flush-mounted insert has operating elements attached.



#### Note

The brightness value set last is retained after the switch-off (memory function). The memory touch-type controller only starts to control after the first operation from "bright" to "dark", the dimming direction being reversed with each stop. At maximum brightness, the memory touch-type controller stops, at minimum brightness the dimming direction changes.  
If the dimmer is switched "brighter", the dimming direction is from minimum to maximum brightness.

### 4.2 Normal operation

For operating mode "Normal operation" the sliding switch must be set on I - compare chapter "Commissioning".

#### Activation

- Tap briefly on the control element.  
The brightness value last set (memory value) will be automatically set.

After each dimming process the dimming direction is reversed and it is set darker or brighter.

#### Increasing the brightness

- Keep the control element pressed.  
The current brightness value is adjusted brighter until the maximum brightness value has been reached.

#### Reducing the brightness

- Keep the control element pressed.  
The current brightness value is adjusted darker until the minimum brightness value has been reached. If the control element continues to be pressed, the dimming direction changes and it is adjusted brighter again until the maximum brightness value has been reached.

#### Deactivation

- Tap briefly on the control element.  
The current brightness value is saved as a memory value and the lighting system is deactivated.

### 4.3 Parallel operation (extension unit)

- Press the control element of the extension unit.  
All memory touch-type controllers are switched and dimmed simultaneously via the extension unit.

Lighting systems can also be operated with uniform brightness values:

- Keep the control element of the extension unit pressed for 10 seconds.  
The lighting systems are set to the maximum brightness value and can then be operated "synchronously".

### 4.4 Button mode

*Only valid for 6550 U ...*

For operating mode "Button mode" the sliding switch must be set on II - compare chapter "Commissioning".

For button mode the relay output acts as NO contact button. Button mode can be implemented both via the mechanical control elements, the IR control element 6066- ... and via the extension unit input.

- Tapping: The relay is activated for a brief period.
- Holding: The relay switches for the duration of the activation.

### 4.5 Operation with Busch Watchdog flush-mounted sensors - type designation in the Busch Watchdog program



#### Note

In these operating instructions both the Busch Watchdog (Art. No. 6810-21 ... -10 ...) and the comfort sensors (Art. No. 6800- ... -10 ... (M)) are designated as "flush-mounted sensors."

- Please pay attention to the correct type assignment in the description.

The type designation can be found on the rear side of the respective device.

After the interruption or activation of the mains voltage the memory touch-type controller switches the connected loads in dependence of the type of sensor as follows:

Flush-mounted sensor type	ON period
6810-21 ... -10 ...	80 seconds
6800- ... -104(M) or higher	Dependent on the setting at the flush-mounted sensor (at least 1 minute at a time setting of < 1 minute). Exception is short-time pulse JL.



#### Note

The On period is independent of the brightness set on the sensor.

### 4.6 Extension units

The following are possible extension units:

- Normally-open contact button, e.g. 2020 US (Switching / dimming possible via extension unit button. If a Busch-Watchdog attachment is used with the 6550 U-10, ... only switching is possible).
- Flush-mounted insert 6805 U in combination with Busch Watchdog 180 sensors

### 4.7 Extension unit operation

In connection with flush-mounted sensors, extension unit operation is possible via two models:

- Activation via NO contact button
- Extension unit insert 6805 U-

#### Passive extension unit operation by means of NO push-button

The function performed on the NO contact push-button causes the connected loads to be switched on as follows:

Flush-mounted sensor type	ON period
6810-21... - 10 ...	80 seconds
6800- ... - 104(M) or higher	Depending on the setting on the flush-mounted sensor



#### Note

The On period is independent of the brightness set on the sensor.

Deactivation / dimming is not possible via the extension unit. Multiple activation when the lighting is switched on leads to a "reset" of the previously expired time.

### Active extension unit operation (Busch Watchdog) with 6805 U and flush-mounted sensors

Since the main unit and extension unit each have a separate twilight value setting the current brightness conditions at the mounting position can be taken into consideration individually.

The actual switch-OFF delay results when adding the time set on the main unit and on the extension unit. In connection with flush-mounted sensors 6800- ... -104(M) or higher, it is recommended to operate the extension units with the short-pulse time setting  $\Delta t$  when the times set on the main unit are to be precisely adhered to.



#### Note

Further information on the respective flush-mounted sensor is contained in the respective operating instructions.

### 4.8 Operation with the Busch Watchdog Presence 6813- ... or 6813/11-

Detailed information is contained in the respective operating instructions.

### 4.9 Comfort timer control element 6455

Detailed information is contained in the respective operating instructions.

#### **4.10 Adjusting the basic brightness (if necessary)**

With the 6550 U-10 ..., the basic brightness is set via the attached control element. With the 6550, it is set via a button connected to terminal 1.

1. Keep the control element pressed for approximately 30 seconds to enter the programming mode.  
The memory touch-type controller has switched to "Programming mode" when it jumps automatically to a minimum brightness value.
2. Set the lighting to the desired brightness value and then release the button.  
Approximately 30 seconds after releasing the button the memory touch-type controller jumps automatically back to maximum. This indicates that the setting process has been carried out correctly.

If this is not the case, please repeat the adjustment of the basic brightness.

#### **4.11 Restoring the memory function after a mains power failure**

During a mains power failure the memory touch-type controller loses the previously set brightness value and switches on with the maximum brightness at its next operation. The memory function is lost.

Procedure for restoring the memory function:

1. Adjust the lighting according to the desired intensity.
2. Switch the lighting off.

During the next activation the previous value is saved and set automatically.

## 5 Technical data

### General

Nominal voltage	230 V AC $\pm 10\%$ , 50 Hz
Nominal power	700 W / VA
Nominal current	4 A cos $\varphi$ 0,9 or 3 A cos $\varphi$ 0,5
Power consumption	1 W / VA
Extension unit input	230 V AC $\pm 10\%$ , 50 Hz
Control voltage	1 ... 10 V DC
Control current	Maximum 50 mA DC
Module width	2 MW (1 MW = 18 mm) applies only to Modular DIN Rail Component (MDRC)
Ambient temperature range	0 ... 35 °C

## 6 Setup and function

The device is intended for the activation of the following types of loads:

	230 V incandescent lamps
	230 V halogen lamps
	Low-voltage halogen lamps with conventional transformers

### 6.1 Features of function and equipment

- 3-wire connection system (neutral conductor is required)
- For LED control via ballasts
- Without control element
- Non-illuminable
- With integrated inrush-current limiter

## 6.2 Possible combinations

	Flush-mounted	MDRC
	 6550 U-101	 6550
6597	X	
2020 US	X	
2021/6 UK	X	
6066- ...	X	
6543- ...	X	
		 3099



### Note

When using control element 6543- ..., remove the plugged-in illuminating element since it cannot be illuminated when combined with memory touch-type controller 6550 U-10 ....

## 7 Installation and electrical connection



### Warning

#### Electric voltage!

Risk of death due to electrical voltage of 230 V during short-circuit in the low-voltage line.

- Low-voltage and 230 V lines must not be installed together in a flush-mounted socket!

### 7.1 Requirements for the electrician



### Warning

#### Electric voltage!

Install the device only if you have the necessary electrical engineering knowledge and experience.

- Incorrect installation endangers your life and that of the user of the electrical system.
- Incorrect installation can cause serious damage to property, e.g. due to fire.

The minimum necessary expert knowledge and requirements for the installation are as follows:

- Apply the "five safety rules" (DIN VDE 0105, EN 50110):
  1. Disconnect from power;
  2. Secure against being re-connected;
  3. Ensure there is no voltage;
  4. Connect to earth and short-circuit;
  5. Cover or barricade adjacent live parts.
- Use suitable personal protective clothing.
- Use only suitable tools and measuring devices.
- Check the supply network type (TN system, IT system, TT system) to secure the following power supply conditions (classic connection to ground, protective earthing, necessary additional measures, etc.).

## 7.2 Mounting



### Warning

#### Electric voltage!

Risk of death and fire due to electrical voltage of 230 V.

- Work on the 230V supply system may only be performed by authorised electricians!
- Disconnect the mains power supply prior to installation and/or disassembly!

The flush-mounted insert must only be installed in flush-mounted wall boxes according to DIN 49073-1, Part 1, or suitable surface-mounted housings.

The MDRC must only be installed on mounting rails according to DIN EN 500022. The MDRC is latched onto the mounting rail.



#### Note

We recommend using a flush-mounted box with an installation depth of 60 mm. In combination with Presence Watchdog 6813- ..., it must be installed on the ceiling of a room.



### Warning

#### Electric voltage!

There is the risk of personal injury and damage to property. The control output (1 ... 10 V) of the memory touch-type controller is no low-voltage safety (SELV).

### 7.3 Installation with IR remote control

The memory touch-type controller 6550 U-10 ... can be used as a component within the IR remote control system. In this case, the memory touch-type controller must be combined with the IR remote control element 6066- ... When installing with remote control the installation site should lie within the IR receiving range - see Fig. 1 and Fig. 2. Please note that the IR receiving range may vary due to extraneous light (e.g., sunlight, illumination).

Coverage in connection with IR control element 6066- ...

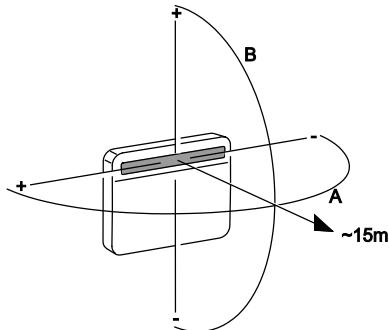


Fig. 1: Coverage

Detection range in connection with IR control element 6066- ...

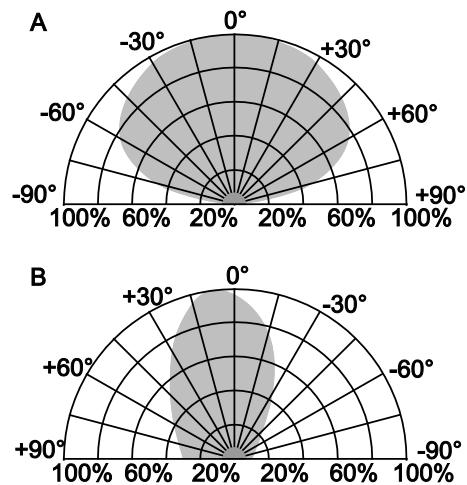


Fig. 2: Detection range

#### 7.4 Mounting with Busch Watchdog Flush-Mounted Sensors

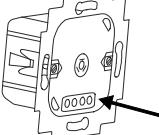
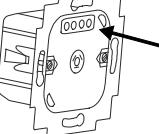
The memory touch-type controller 6550 U-10 can be used in combination with the Busch-Watchdog 180 flush-mounted sensors 6810-21 ... -101, ..., 6800- ... -104(M) or higher. In this case, a switching function (ON/OFF) is possible, but *no dimming function*.

The mounting height depends on the selection of the flush-mounted sensor - table. For further information on mounting height, the adjustment of the flush-mounted sensors, see the relevant operating instructions of the respective flush-mounted sensor. For push-button operation please note the following:

- The phase of the extension unit and the phase of the supply voltage must be the same and be connected to an electric circuit.
- When laying lines, ensure that there is sufficient distance between the control lines and load lines (at least 5 cm).
- The maximum line length of the extension unit cables is 100 m.
- Changing the line routing of existing two-way circuits and cross connections is not necessary.

##### 7.4.1 Mounting height / application

To guarantee an optimum function of the flush-mounted sensors, please observe the following table.

Flush-mounted sensor type	Mounting height, application	Built-in position of connecting screws 6550U-10 ...
6810-21...-101, 6800- ... -104	0.8 – 1.2 m	Bottom 
6800- ... -104M	0.8 – 1.2 m (stairwell)	Top 
	2.0 – 2.5 m (room monitoring)	

## 7.5 Electrical connection



### Caution

#### Risk of damaging the device due to excessive voltage!

When using different phases for the supply input L and the extension unit input 1, the voltage there could be too high (380 V).

- Connect supply input L and the push-buttons for extension unit input 1 to the same phase.



### Note

If a protective conductor connection is used, ensure that it is properly connected to the lamp and to the electronic ballast units.

## 7.6 Extension unit input (parallel operation)

Parallel operation - Fig. and Fig. 3

The memory touch-type controller can be operated via an extension unit. In the process, the following must be observed:

- The maximum cable length depends on the admissible ripple voltage of the extension unit inputs. The ripple voltage, however, must not exceed 100 V. In practice this corresponds to a cable length of approx. 100 m.
- The number of the push-buttons (e.g. 2020 US) at a cable length of 100 m is unlimited.
- If illuminated push-buttons (e.g. 2020 USGL) are used, only push-buttons with a separate N-connection are admissible. Contact-parallel illumination is not admissible.
- Do not install control and load line in the one cable, to prevent unwanted switching processes.

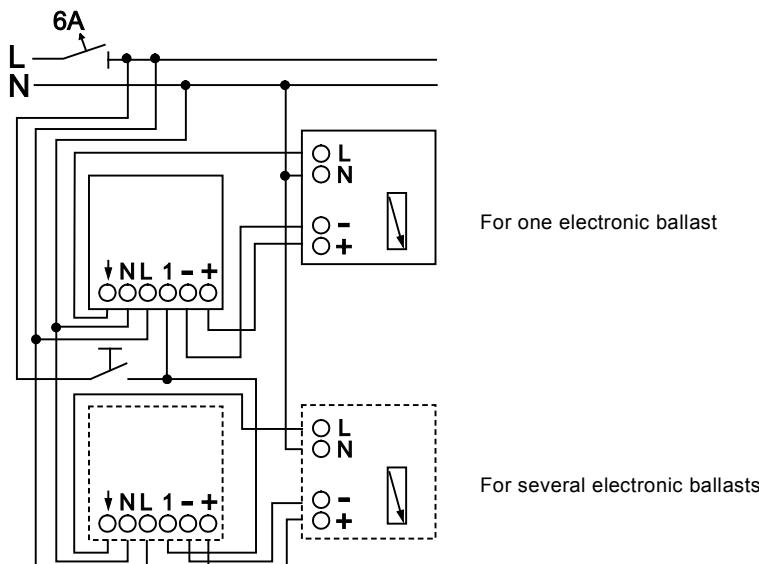


Fig. : Activation of the 6550 U-10 ... (flush-mounted version)

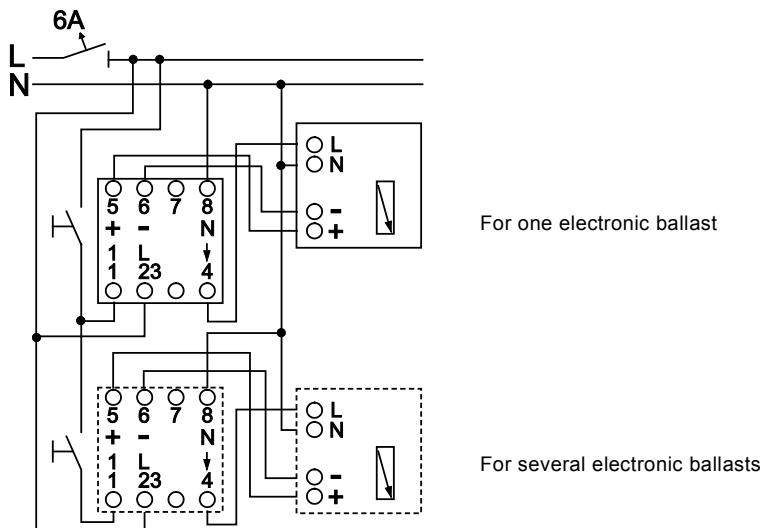


Fig. 3: Activation of the 6550 (rail-mounted version)

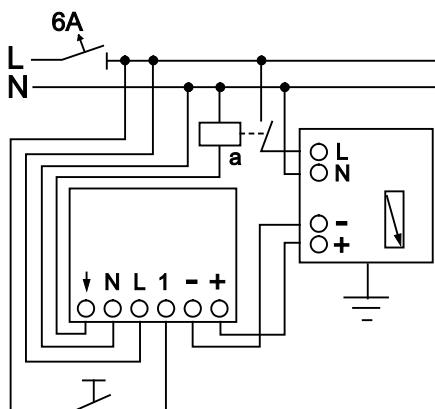


Fig. 4: 6550 U-10 ... for activation of several electronic ballasts  $\geq 50 \text{ mA}$



**Note**

Relay **a** serves for contact amplification, and is not included in the scope of supply.

## 8 Commissioning

### 8.1 Setting the operating mode on the slide switch

*Only valid for 6550 U-10...*

The memory touch-type controller offers two different operating modes - see also chapter "Operation".

- Normal mode = Setting bottom I (delivery status)
- Button mode = Setting top II

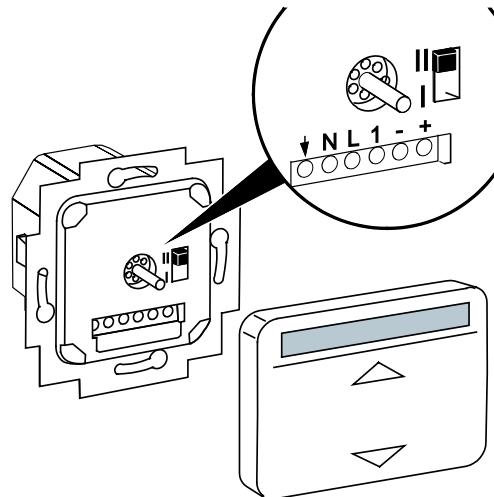


Fig. 5: Slide switch

### 8.2 IR control element

*Only valid for IR remote control*

#### Mounting the IR control element

1. In the case of IR control element 6066-..., set the desired address first – see Fig. 6.
2. Plug the control element onto the flush-mounted version of the memory touch-type controller.  
Ensure that the IR control element does not jam in the frame.

#### Dismounting the IR control element

- Use the notches on the right and left of the control element to lever it off.

#### Addressing of the IR control element

The address of IR control element 6066-... is set on number 1 at the factory.

1. If necessary, change the address on the rear of the control element via the address wheel.
2. Observe the "IR receiving range" when addressing - Fig. 1 and Fig. 2.

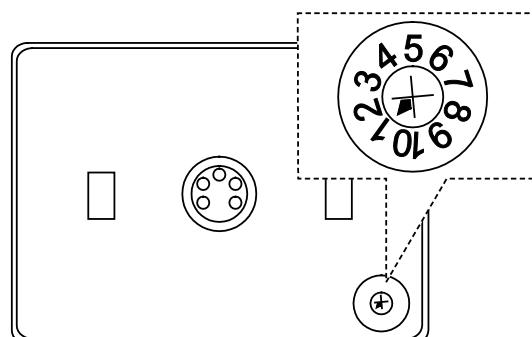


Fig. 6: Addressing

### 8.3 Fault rectification

Diagnosis	Possible cause	Fault rectification
The device is permanently set to maximum brightness	Control voltage (1 V ... 10 V) is not connected	Connect the control voltage (1 V ... 10 V)
	–	Switch the mains power supply OFF / ON
	Minimum brightness is set too high	Adjustment minimum brightness
Light does not come on	Control voltage (1 V ... 10 V) has short-circuited	Rectify short-circuit
	–	Switch the mains power supply OFF / ON
	Minimum brightness is set too low	Adjustment minimum brightness
	Line-side fuse is defective	Replace fuse
	Fluorescent lamp is defective	Replace fluorescent lamp
	Electronic ballast is defective	Replace electronic ballast
	Controller is defective	Replace controller

*Only valid for 6550 U-10...*

Diagnosis	Possible cause	Fault rectification
LED of control element (6066...) is OFF	Infrared detection range influenced by extraneous light (e.g. sunlight, illumination)	Remove extraneous light
	No mains power	Connect mains power
LED of 6066.... flashes continuously	Infrared detection range influenced by extraneous light (e.g. sunlight, illumination)	Remove extraneous light
LED of 6066.... does not flash at transmission signal	No incoming signal	Check reception of infrared signal
	Battery of IR remote control or wall-mounted transmitter is empty	Replace battery
	Receiver outside if transmission signal	Check infrared detection range

# Operating Instructions

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